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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/988,325

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Keiichi Senda

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06/18/2004

WENDEROTH, LIND & PONACK, L.L.P.

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WASHINGTON, DC 20006-1021

EXAMINER

NGUYEN, PHU K

ART UNIT

PAPER NUMBER

2671

DATE MAILED: 06/18/2004

5

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/988,325

Applicant(s)

SENDA ET AL.

Examiner

Phu K. Nguyen

Art Unit

2671

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4,7,10,12 and 13 is/are rejected.
- 7) ☒ Claim(s) 5,6,8,9 and 11 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

*Phu K. Nguyen*  
PHU K. NGUYEN  
ART UNIT 2671  
SEP 29 2009

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_.

- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over OBATA (5,335,319).

As per claim 1, Obata teaches the claimed "polygon rendering device", comprising: "a partial polygon rendering section for performing a rendering process, and based on the partial polygon data generated by said polygon division section, generating image data which represents an image of the polygon" (Obata, column 10, lines 38-43), "wherein each of said partial polygons include a plurality of triangles which respectively include a vertex of said polygon,

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and each of the triangles shares at least one edge with any one of the triangles included in the same partial polygon" (Obata, column 11, line 34 to column 12, line 26). It is noted that Obata does not explicitly teach "a polygon division section for generating, based on polygon data which specifies a polygon to be rendered, a plurality of partial polygon data each specifying one piece of partial polygons which are obtained by dividing the polygon" as claimed. However, given Obata's processing of a limited number of apex (column 12, lines 30-33), it would have been obvious to a person of ordinary skill in the art to divide a polygon having a large number of apexes into smaller polygons with processable number of apexes because by dividing a large polygon into smaller polygons the system will accommodate to process the polygon with a large number of vertices and clearly enhance the capability of the system.

Claim 2 adds into claim 1 "said polygon data includes a set of coordinates for specifying said polygon, an unwanted point elimination section for applying an elimination process to said polygon data is further comprised to generate new polygon data from which any unwanted set of coordinates is eliminated, and said polygon division section generates said partial polygon data in accordance with the new polygon data which is obtained by the unwanted point elimination section" which Obata teaches in column 6, lines 26-31, lines 51-52, 62-64.

Claim 3 adds into claim 1 "a concave polygon determination section for determining whether or not said polygon data specifies a concave polygon,

wherein said polygon division section generates said partial polygon data based on the polygon data which is determined as specifying the concave polygon by said polygon division section" which Obata teaches in column 7, lines 19-32.

Claim 4 adds into claim 1 "said partial polygon rendering section performs a perspective projection transformation process based on the partial polygon data generated by said polygon division section, and generates image data which represents the image of said polygon viewed from a predetermined viewpoint" which Obata does not teach. However, given Obata's displaying of polygons in a graphic display apparatus, it would have been obvious to a person of ordinary skill in the art to perform a perspective projection on the polygons because the perspective projection provides a realistic appearance of the object formed by the polygons and improves the quality of the display image in three dimensional world.

As per claim 7, Obata teaches the claimed "polygon rendering method", comprising: "a partial polygon rendering step of performing a rendering process, and based on the partial polygon data generated in said polygon division step, generating image data which represents an image of the polygon" (Obata, column 10, lines 38-43), "wherein each of said partial polygons includes a plurality of triangles which respectively include a vertex of said polygon, and each of the triangles shares at least one edge with any one of the triangles included in

the same partial polygon" (Obata, column 11, line 34 to column 12, line 26). It is noted that Obata does not explicitly teach "a polygon division step of generating, based on polygon data which specifies a polygon to be rendered, a plurality of partial polygon data each specifying one piece of partial polygons which are obtained by dividing the polygon" as claimed. However, given Obata's processing of a limited number of apex (column 12, lines 30-33), it would have been obvious to a person of ordinary skill in the art to divide a polygon having a large number of apexes into smaller polygons with processable number of apexes because by dividing a large polygon into smaller polygons the system will accommodate to process the polygon with a large number of vertices and clearly enhance the capability of the system.

As per claim 10, Obata teaches the claimed "polygon rendering program", comprising: "a partial polygon rendering step of performing a rendering process, and based on the partial polygon data generated in said polygon division step, generating image data which represents an image of the polygon" (Obata, column 10, lines 38-43), "wherein each of said partial polygons includes a plurality of triangles which respectively include a vertex of said polygon, and each of the triangles shares at least one edge with any one of the triangles included in the same partial polygon" (Obata, column 11, line 34 to column 12, line 26). It is noted that Obata does not explicitly teach "a polygon division step of generating, based on polygon data which specifies a polygon to be rendered, a plurality of

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partial polygon data each specifying one piece of partial polygons which are obtained by dividing the polygon" as claimed. However, given Obata's processing of a limited number of apex (column 12, lines 30-33), it would have been obvious to a person of ordinary skill in the art to divide a polygon having a large number of apexes into smaller polygons with processable number of apexes because by dividing a large polygon into smaller polygons the system will accommodate to process the polygon with a large number of vertices and clearly enhance the capability of the system.

Claim 13 adds into claim 10 "said polygon rendering program is recorded on a recording medium" which Obata teaches in the control section 11 (figures 9-11).

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 12 recites the limitation "P(c+2)" in line 2. There is insufficient antecedent basis for this limitation in the claim.

Claims 5-6, 8-9, and 11 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: In claims 5, 8, and 11, the allowable feature is "said polygon data

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includes  $n$  sets of vertex coordinates in such an order that the polygon can be rendered in one stroke in a forward direction, said polygon division section selects one of the vertex coordinates as a reference vertex  $P_b$  and in said forward direction, selects a vertex  $P_c$  positioning adjacent to the reference vertex  $P_b$  and a vertex  $P(c+1)$  positioning adjacent to the vertex  $P_c$ , and a triangle  $\Delta P_b P_c P(c+1)$  formed by the reference vertex  $P_b$ , and the vertexes  $P_c$  and  $P(c+1)$  carries, in and on, no other vertex belonging to said polygon and not yet selected, and an angle formed by the reference vertex  $P_b$ , and the vertexes  $P_c$  and  $P(c+1)$  is smaller than 180 degrees, selects, in addition to said reference vertex  $P_b$  and said vertex  $P(c+1)$ , a vertex  $P(c+2)$  which positions adjacent to the vertex  $P(c+1)$  in said forward direction, and a triangle formed by the reference vertex  $P_b$ , and the vertexes  $P(c+1)$  and  $P(c+2)$  carries no other vertex which belongs to said polygon and not yet selected, and an angle formed by the reference vertex  $P_b$ , and the vertexes  $P(c+1)$  and  $P(c+2)$  is smaller than 180 degrees, and generates the partial polygon data specifying at least the partial polygon formed by said reference vertex  $P_b$ , and the vertexes  $P_c$ ,  $P(c+1)$ , and  $P(c+2)$ .

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).



A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Phu K. Nguyen whose telephone number is (703)305 -9796. The examiner can normally be reached on M-F 8:00-4:30.

The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Phu K. Nguyen  
June 10, 2004

  
PHU K. NGUYEN  
PRIMARY EXAMINER  
GROUP 2400